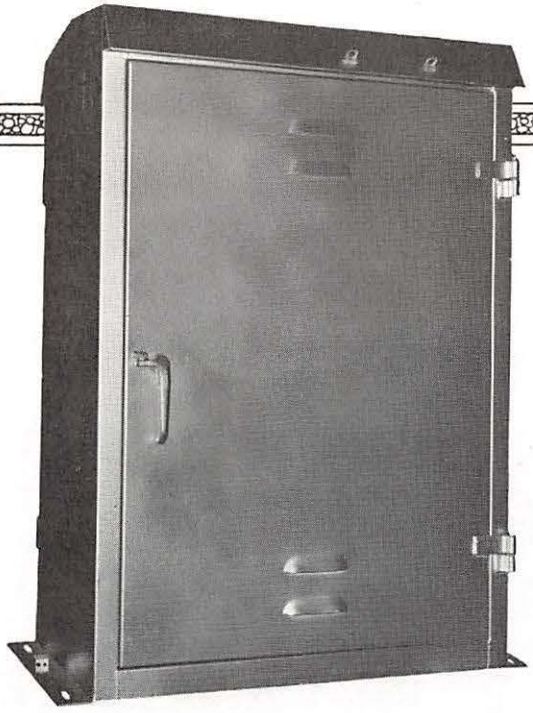
File in proper sequence in
G-R-S Development Binder



GRS
MODULAR STEEL INSTRUMENT CASES
with adjustable fixtures

D68.0201

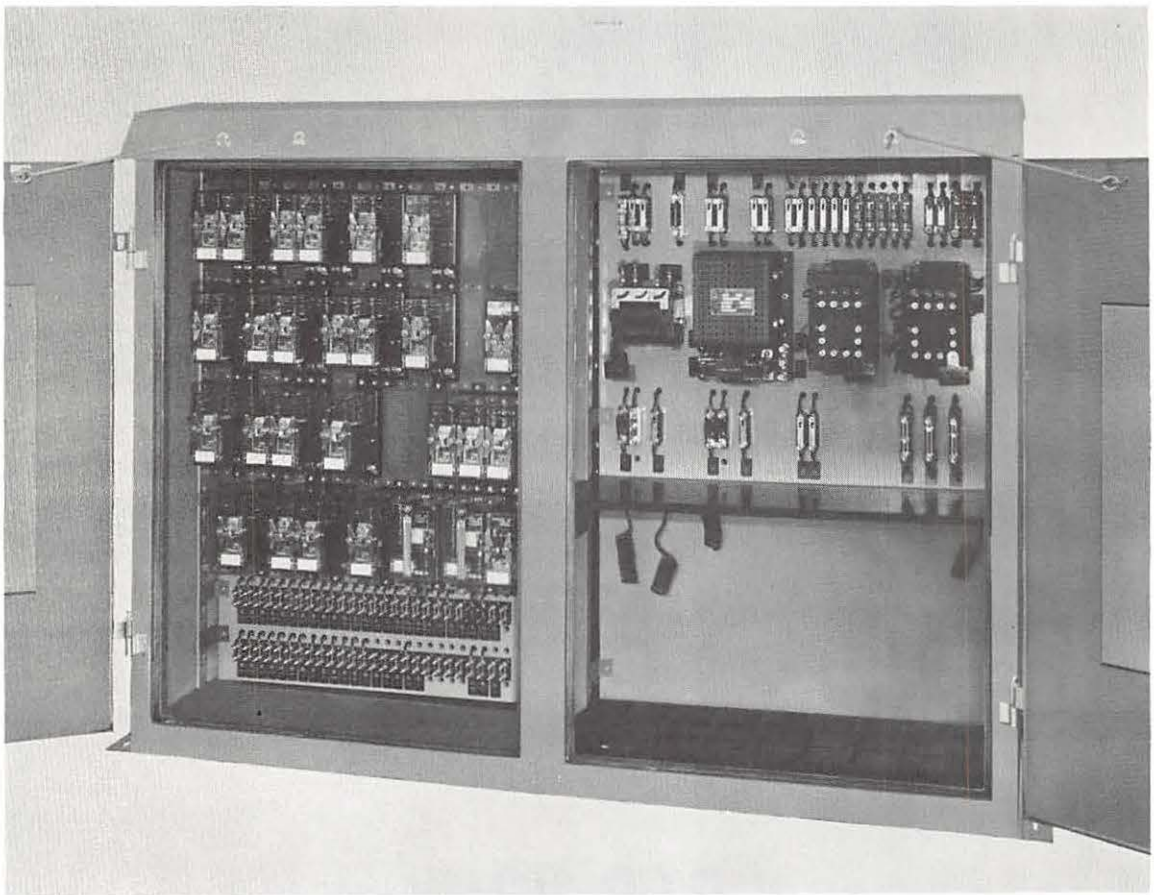
JUNE 1957

SUPERSEDES D68.0201 DATED DECEMBER 1951

GENERAL RAILWAY SIGNAL COMPANY
ROCHESTER 2, NEW YORK

PRINTED IN U.S.A.

GRS DEVELOPMENT SHEET



Low-double case showing arrangement of plug-in relays, rectifiers, transformers, terminal blocks and space provided for battery.

GRS MODULAR STEEL INSTRUMENT CASES

with adjustable fixtures.

Welded steel instrument cases, arranged for adjustable fixtures, can now be shipped from stock in any of five standard sizes. You can order shelves, backboards, terminal boards, relay support bars, etc. as you require --- install them in any arrangement you wish. Thus these cases are completely adaptable to your own particular requirements, can be altered quickly and easily to fit any subsequent wiring and apparatus changes you may make in the future. A single-door case, which uses some of the adjustable fixtures mentioned above, is also available, making the sixth case offered in this line.

Permanently installed keyhole channels, as shown in Figure 1, allow shelves, backboards, relay support bars, etc. to be installed as needed. Each fixture can be moved up or down in increments of 2 3/16 inches.

Five of these cases, Figures 2-7, are dimensioned on a modular basis, thus standardizing many of the fixtures and greatly simplifying ordering, stocking, and case layout. The basic module is the single case, which is one "section" wide. The low-single case is 2 feet 9 3/4 inches wide and 4 feet high (door opening area). The high-single case is same width, but is 5 feet 8 inches high. The low-double case is two low-sections wide, while the high-double case is two high-sections wide. The half-case is just half as wide, but has same height, as a low-single case.

The half-case and the single-door case may be pole mounted or base mounted. Mounting angle sets are available which permit the single-door case to be used on a standard pier-type foundation having 18 1/2-inch anchor bolt spacing.

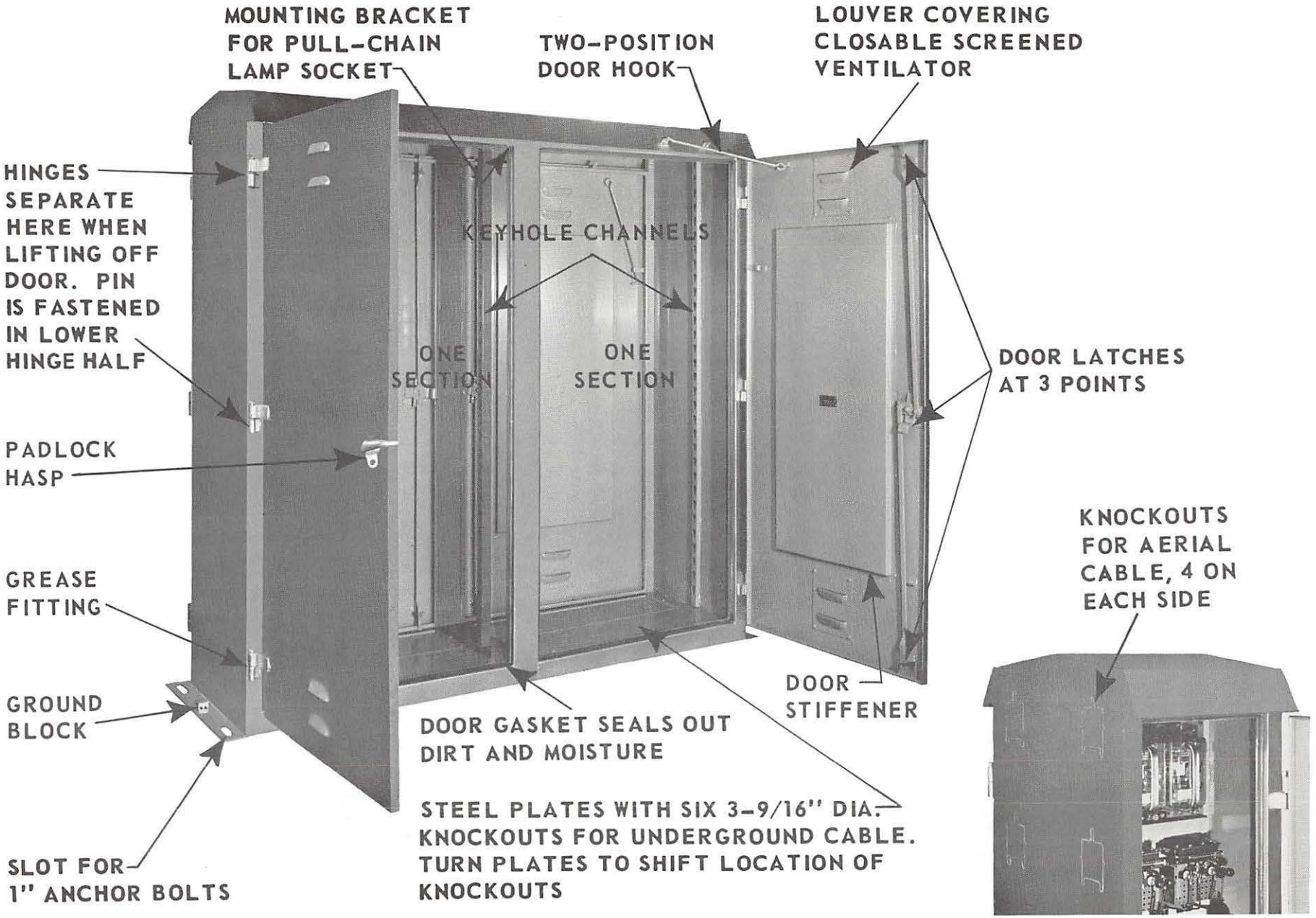
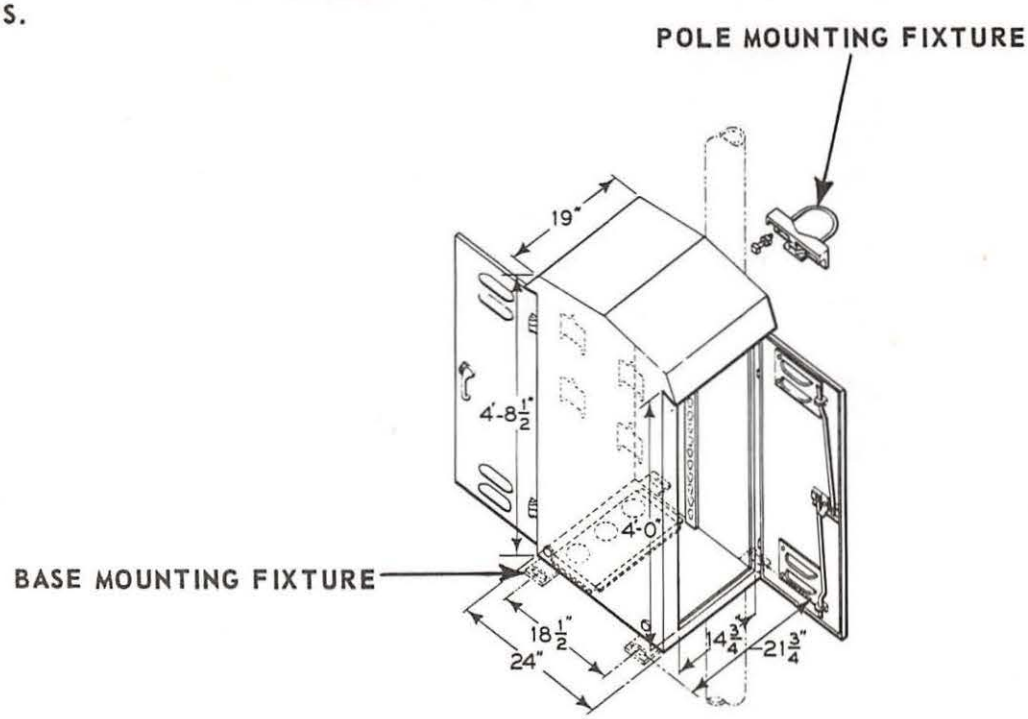

MOUNTING BRACKET FOR PULL-CHAIN LAMP SOCKET
TWO-POSITION DOOR HOOK
LOUVER COVERING CLOSABLE SCREENED VENTILATOR
HINGES SEPARATE HERE WHEN LIFTING OFF DOOR. PIN IS FASTENED IN LOWER HINGE HALF
KEYHOLE CHANNELS
ONE SECTION
ONE SECTION
DOOR LATCHES AT 3 POINTS
PADLOCK HASP
KNOCKOUTS FOR AERIAL CABLE, 4 ON EACH SIDE
GREASE FITTING
GROUND BLOCK
DOOR STIFFENER
DOOR GASKET SEALS OUT DIRT AND MOISTURE
STEEL PLATES WITH SIX 3-9/16" DIA. KNOCKOUTS FOR UNDERGROUND CABLE. TURN PLATES TO SHIFT LOCATION OF KNOCKOUTS
SLOT FOR 1" ANCHOR BOLTS

Figure 1. Features of GRS modular steel instrument cases.

THIS CASE MAY BE POLE-MOUNTED OR BASE-MOUNTED BY USING MOUNTINGS WHICH ARE AVAILABLE FOR THESE PURPOSES.



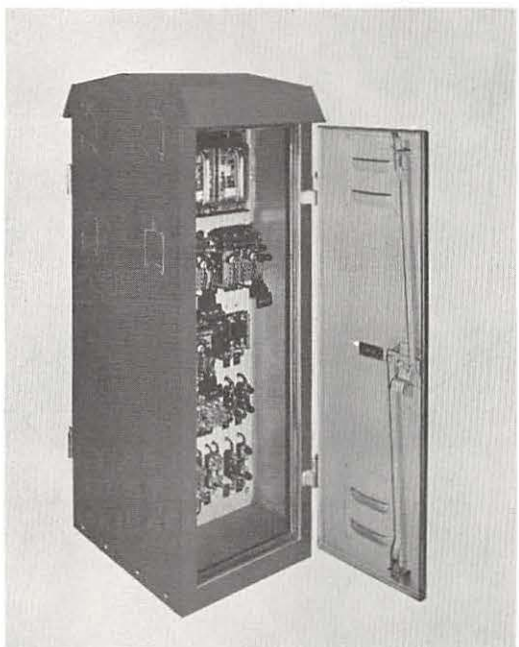


Figure 2. Half case.

GRS DEVELOPMENT SHEET

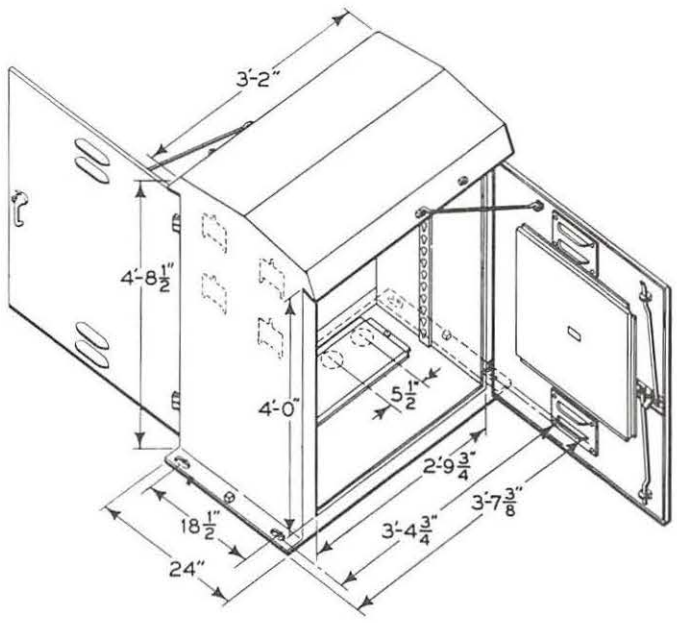


Figure 3. Low-single case.

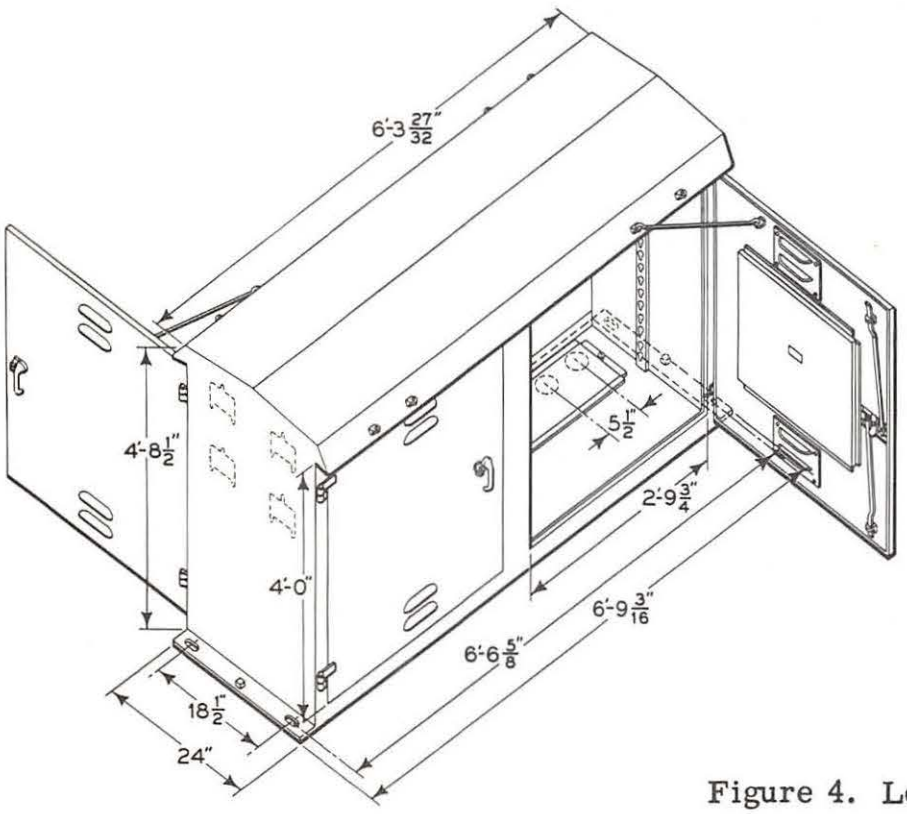


Figure 4. Low-double case.

GRS DEVELOPMENT SHEET

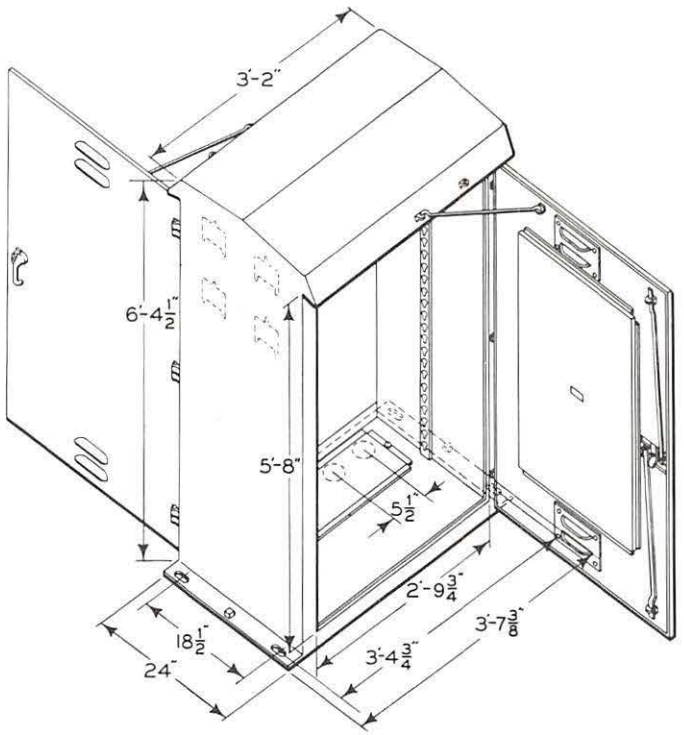


Figure 5. High-single case.

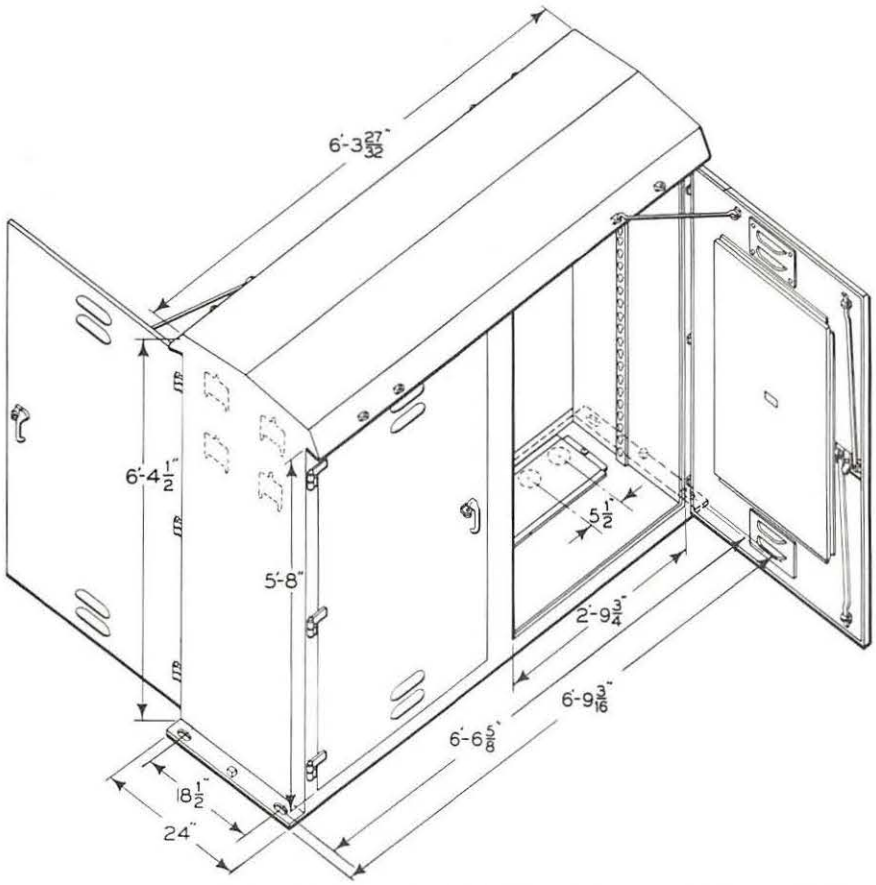
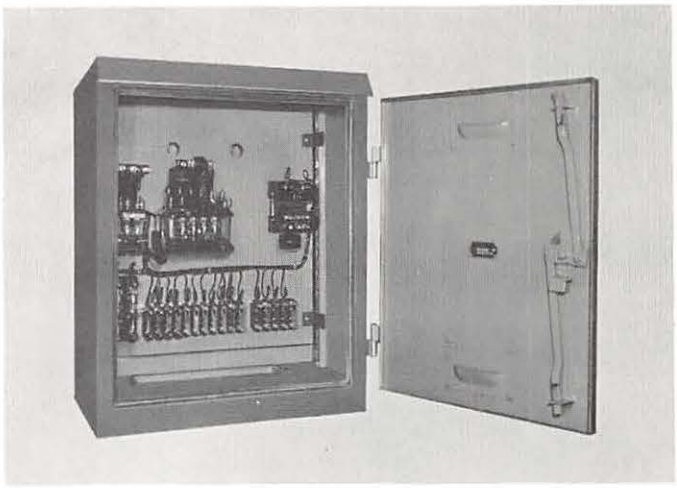
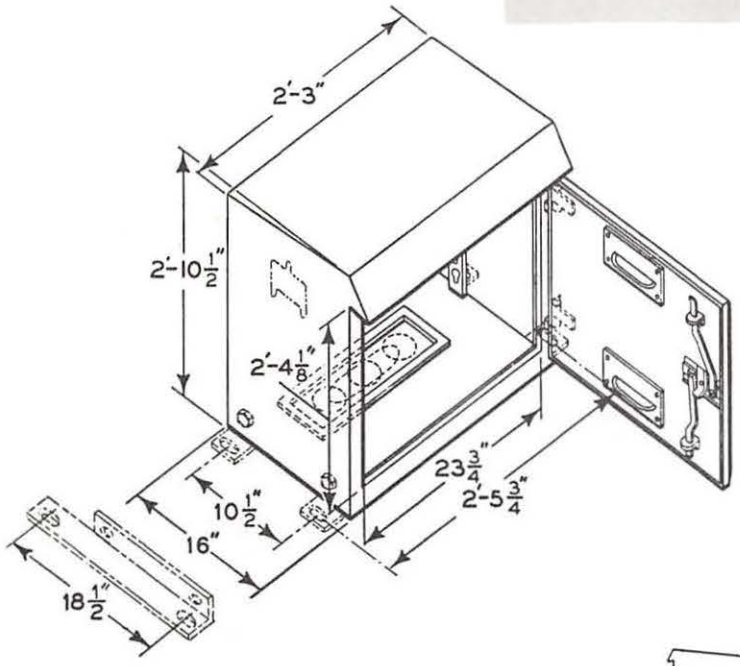


Figure 6.

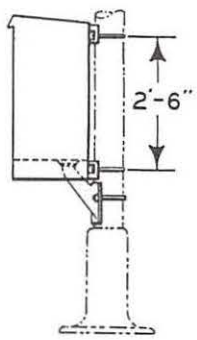
High-double case.

GRS DEVELOPMENT SHEET

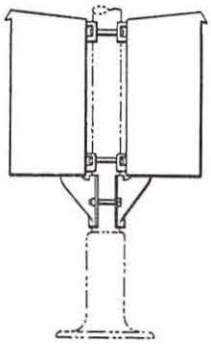




THIS CASE MAY BE POLE-MOUNTED OR BASE-MOUNTED BY USING MOUNTINGS WHICH ARE AVAILABLE FOR THESE PURPOSES. BRACKETS ARE AVAILABLE FOR MOUNTING THIS CASE SINGLY ON CONCRETE POSTS.



POLE MOUNTED SINGLE



POLE MOUNTED DOUBLE

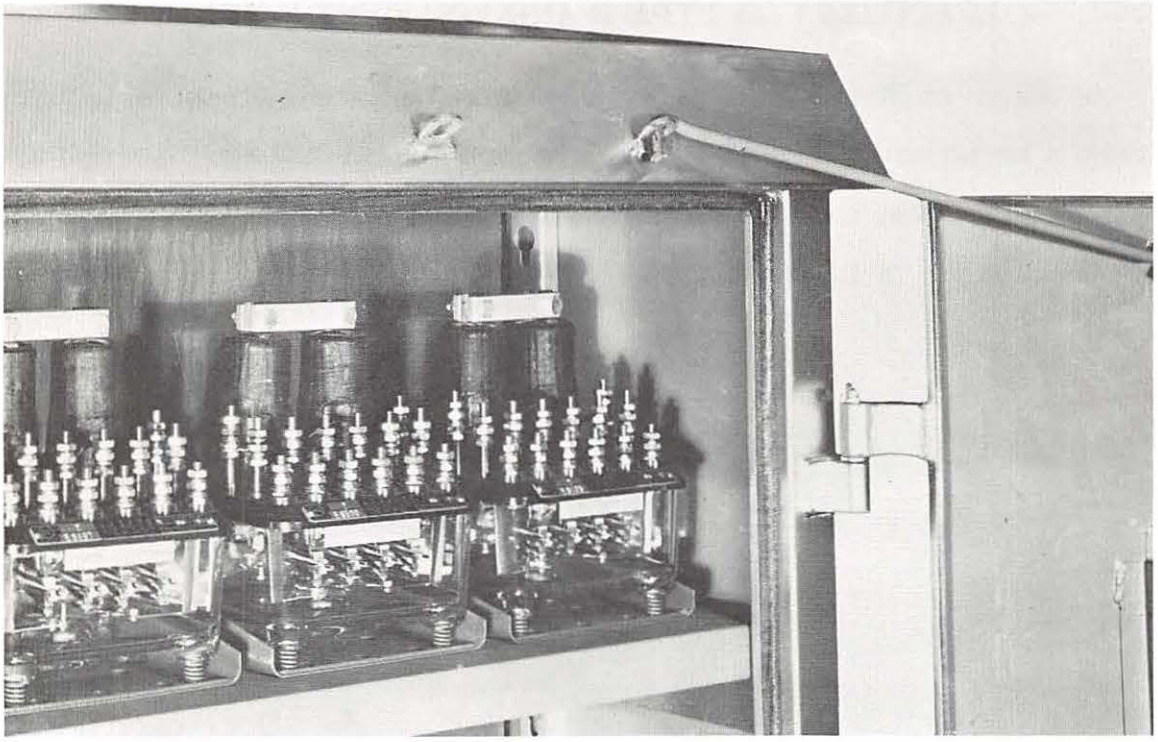
Figure 7. Single-door case shown with backboard-mounted appliances.

CAPACITIES FOR TYPE B AND FOR TYPE K RELAYS

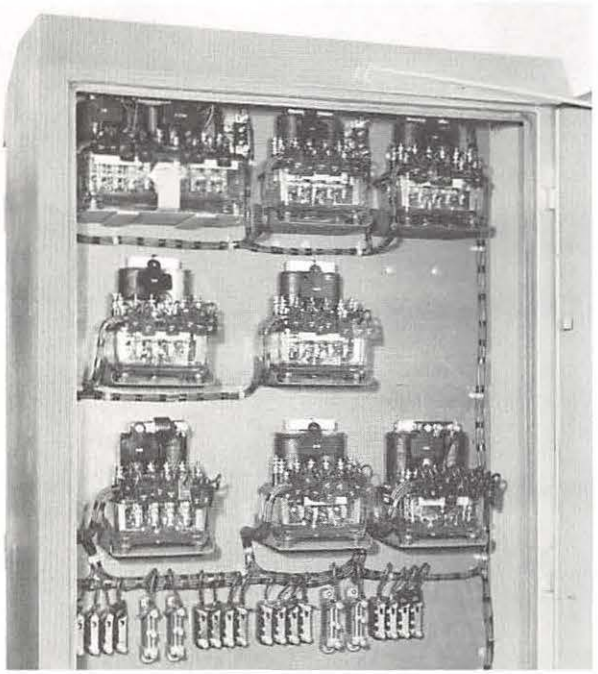
As shown in Figure 8, Type K relays may be mounted on steel shelves or on a backboard. Type B relays are mounted on plugboards which are bolted to the relay support bars, shown in Figure 25. The following table shows capacity of the various cases for Type B1 and Type K4 relays.

Sizes	Max. Cap. for B1 Relays	Maximum Capacity for K4 Relays	
		Shelf-mounted	Backboard-mounted
Half-case	25	6	8
Low-single	60	12	16
Low-double	120	24	32
High-single	84	20	24
High-double	168	40	48
Single-door	*	4	4

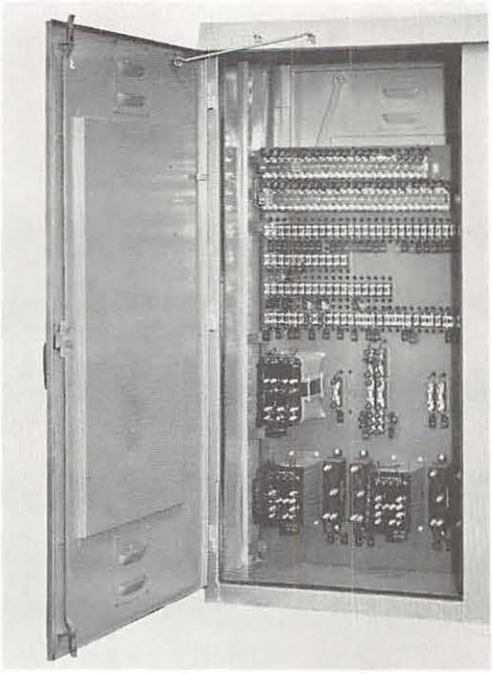
* Designed for shelf- or wall-mounted relays.



TYPE K RELAYS ON STEEL SHELF



TYPE K RELAYS ON BACKBOARD



PLUGBOARD-MOUNTED B RELAYS

Figure 8. Mounting arrangements for Type K and Type B relays.

CAPACITIES FOR TYPE B AND FOR TYPE K RELAYS

As shown in Figure 8, Type K relays may be mounted on steel shelves or on a backboard. Type B relays are mounted on plugboards which are bolted to the relay support bars, shown in Figure 25. The following table shows capacity of the various cases for Type B1 and Type K4 relays.

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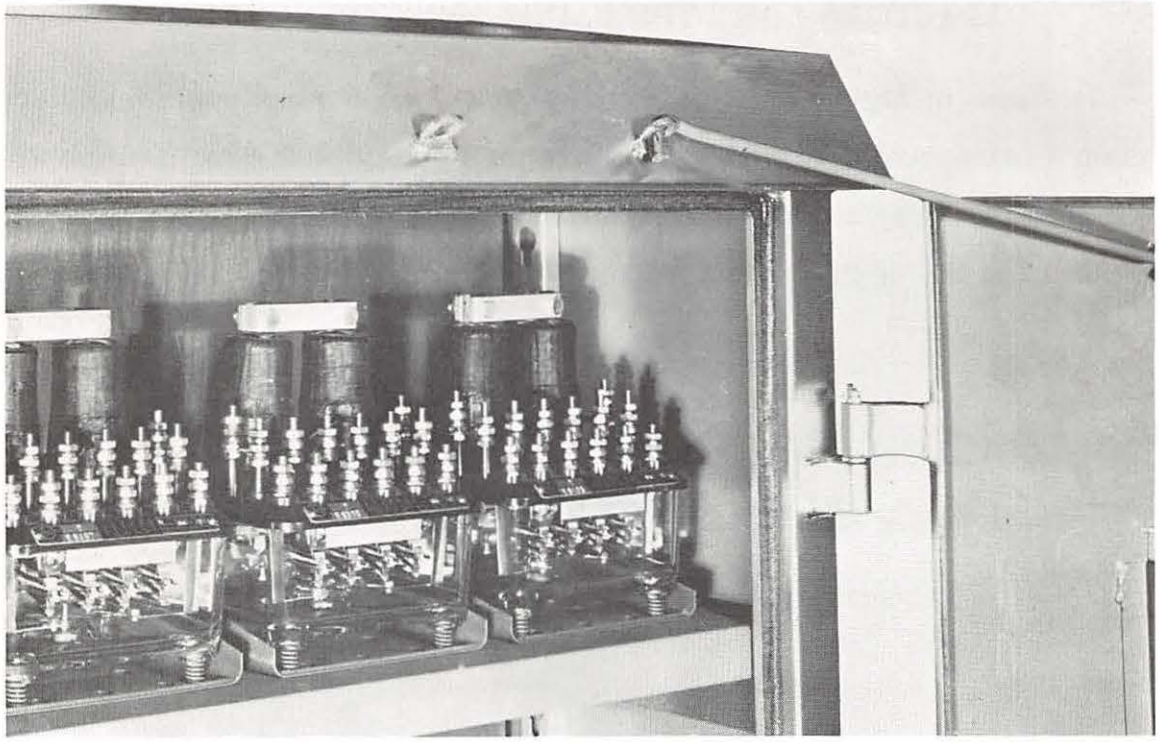
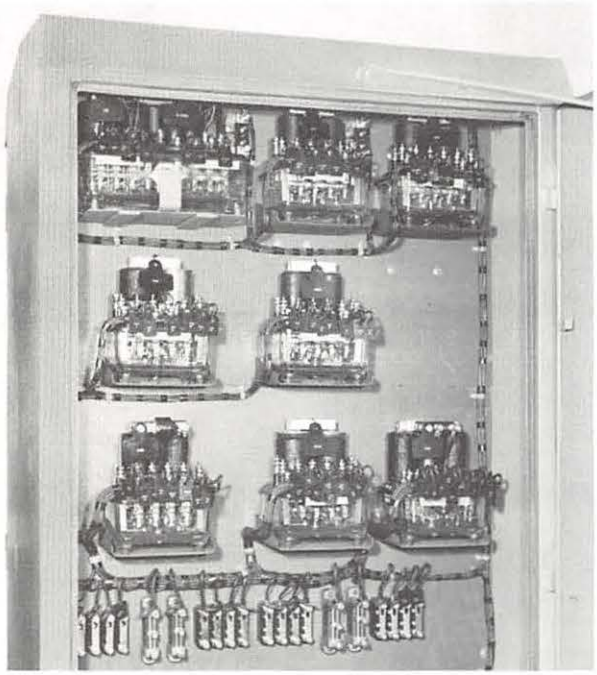
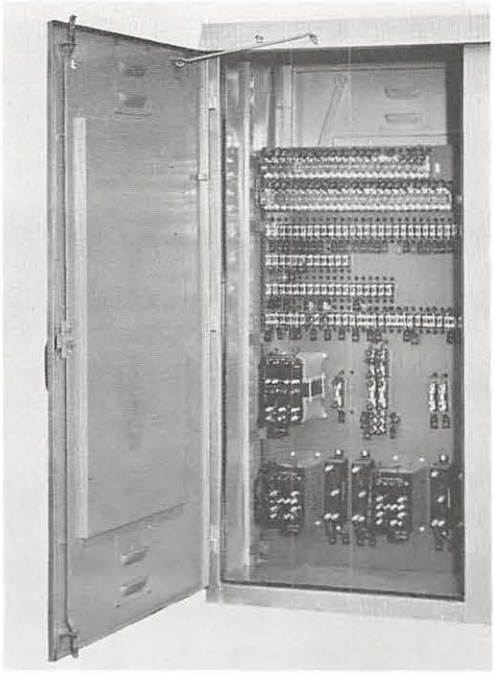


TYPE K RELAYS ON STEEL SHELF



TYPE K RELAYS ON BACKBOARD



PLUGBOARD-MOUNTED B RELAYS

Figure 8. Mounting arrangements for Type K and Type B relays.

CAPACITIES FOR TYPE B AND FOR TYPE K RELAYS

As shown in Figure 8, Type K relays may be mounted on steel shelves or on a backboard. Type B relays are mounted on plugboards which are bolted to the relay support bars, shown in Figure 25. The following table shows capacity of the various cases for Type B1 and Type K4 relays.

Sizes	Max. Cap. for B1 Relays	Maximum Capacity for K4 Relays	
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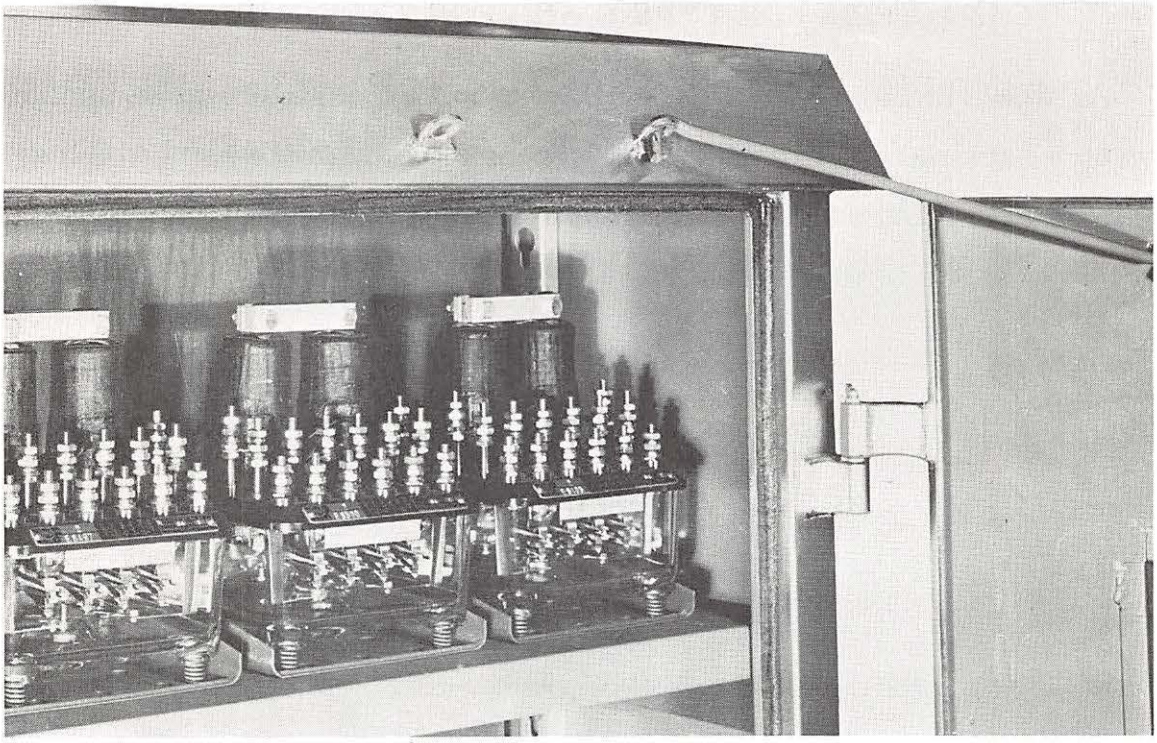
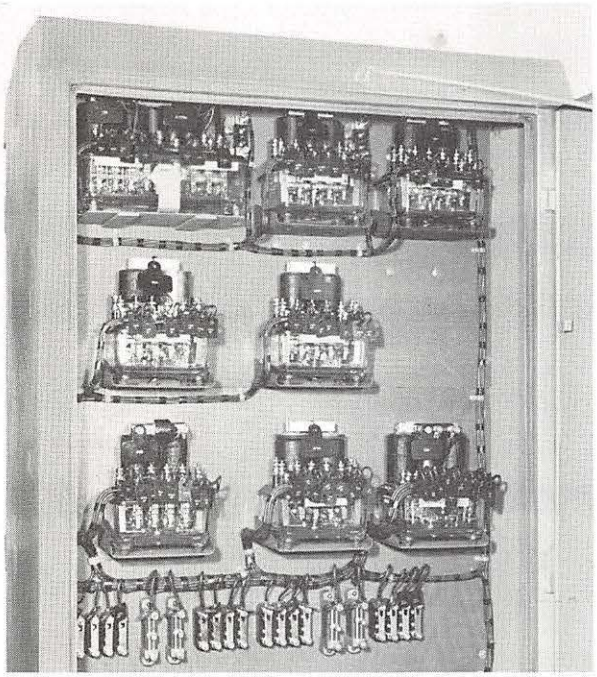
High-single	84	20	24
High-double	168	40	48
Single-door	*	4	4

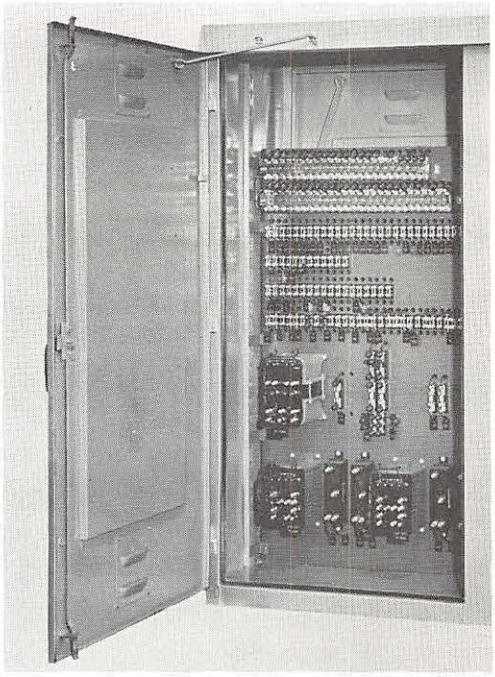
* Designed for shelf- or wall-mounted relays.



TYPE K RELAYS ON STEEL SHELF



TYPE K RELAYS ON BACKBOARD



PLUGBOARD-MOUNTED B RELAYS

Figure 8. Mounting arrangements for Type K and Type B relays.

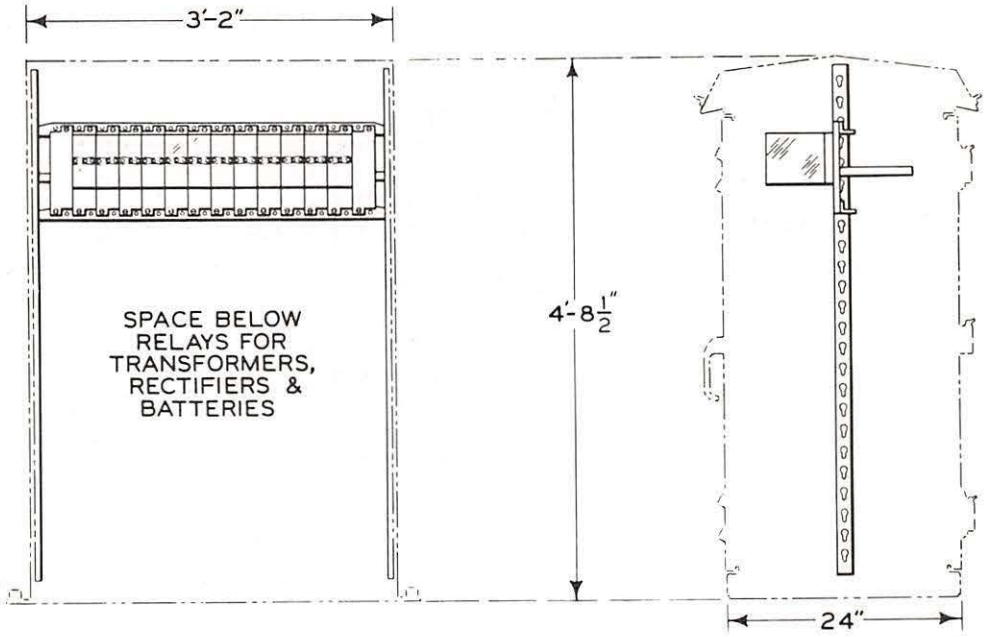


Figure 9. Typical arrangement for Type B relays in low-single case.

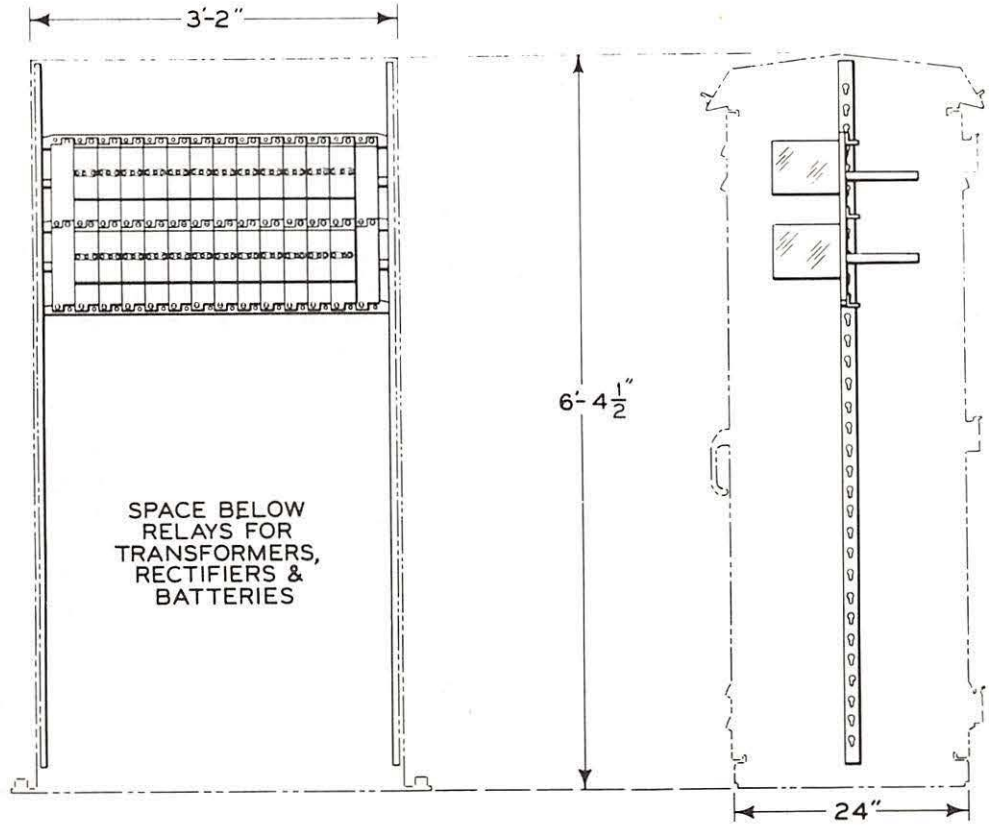


Figure 10. Typical arrangement for Type B relays in high-single case.

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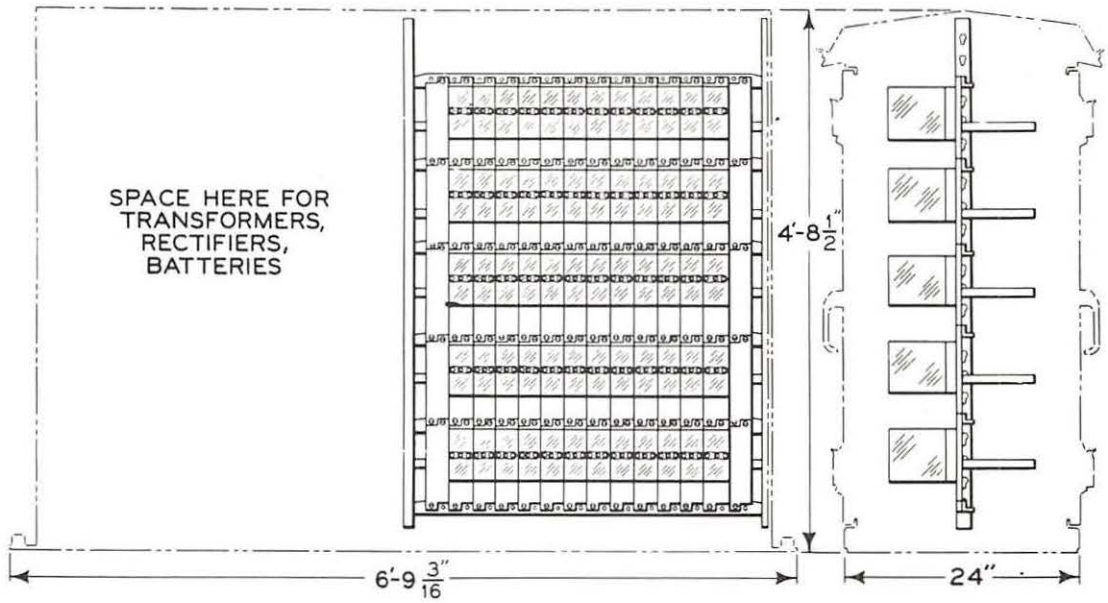


Figure 11. Typical arrangement for Type B relays in low-double case.

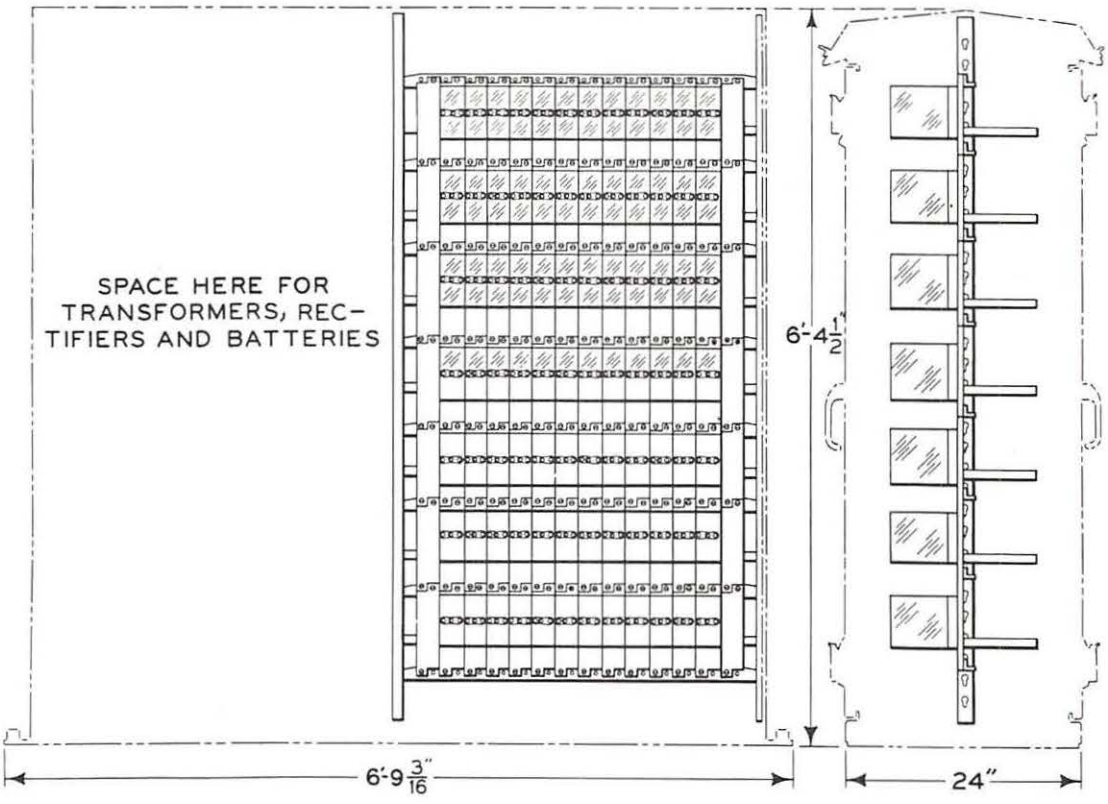


Figure 12. Typical arrangement for Type B relays in high-double case.

TYPICAL ARRANGEMENTS OF ADJUSTABLE FIXTURES

The outstanding feature of this line of GRS cases is their complete adaptability to innumerable combinations and arrangements of appliances, batteries, wiring, and mounting arrangements. Figures 13 through 19 are not intended as recommendations or as examples to order from, they are merely shown to give you some examples of the remarkable flexibility of these cases.

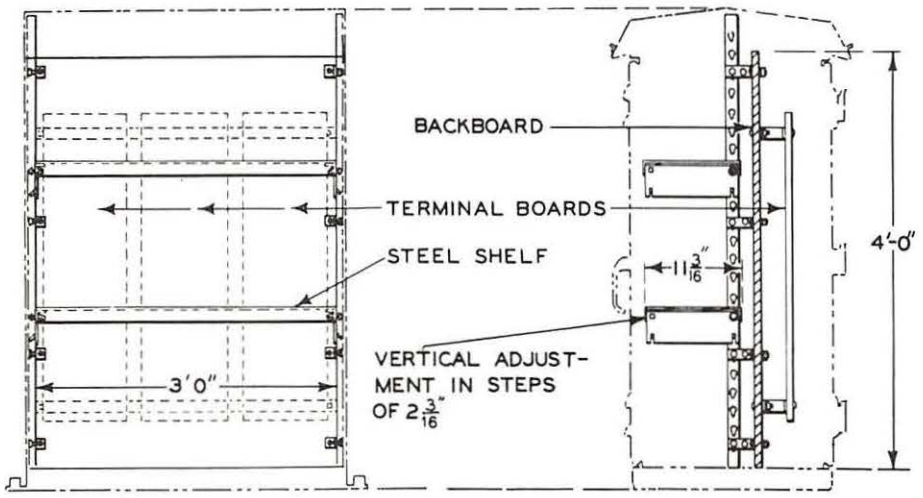


Figure 13. Two steel shelves in low-single case.

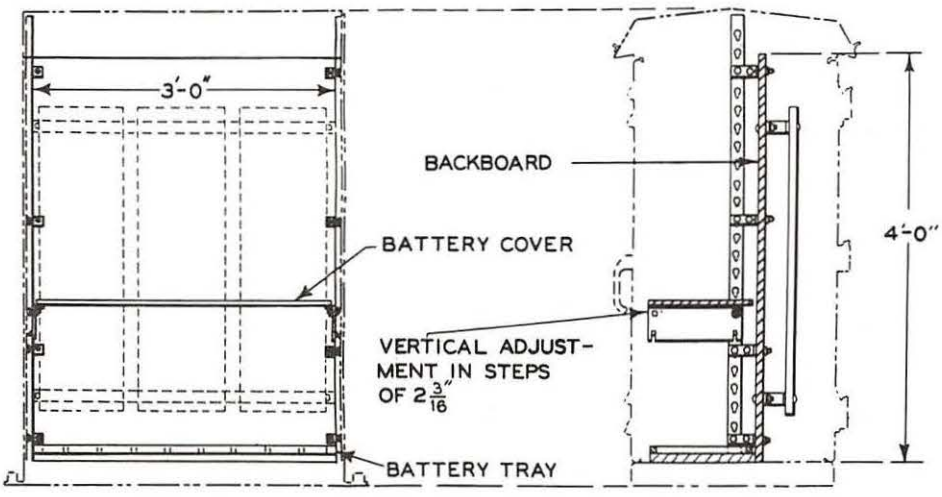


Figure 14. One battery tray and one battery cover in low-single case.

GRS DEVELOPMENT SHEET

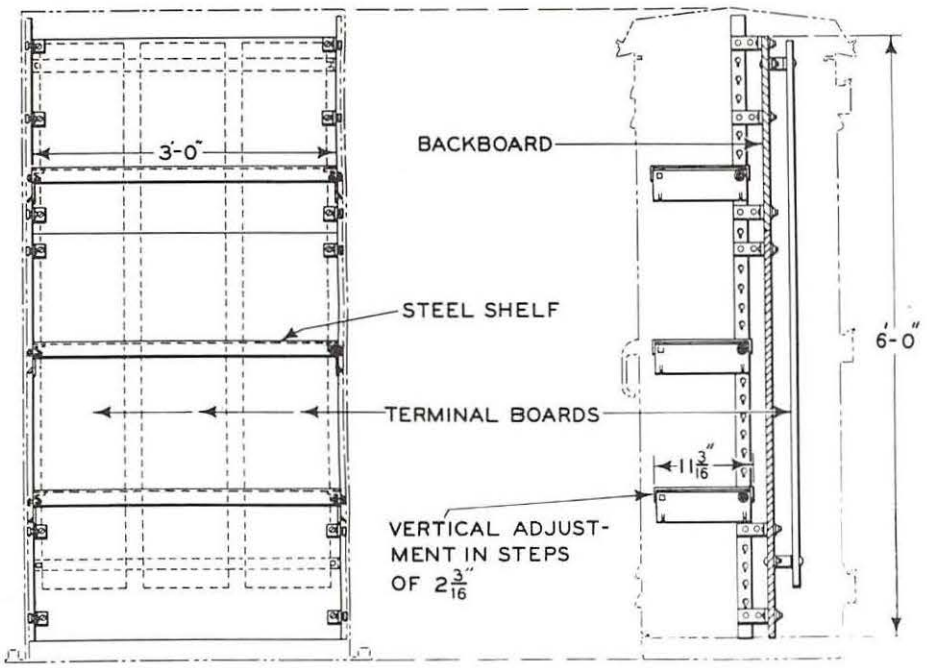


Figure 15: Three steel shelves in high-single case.

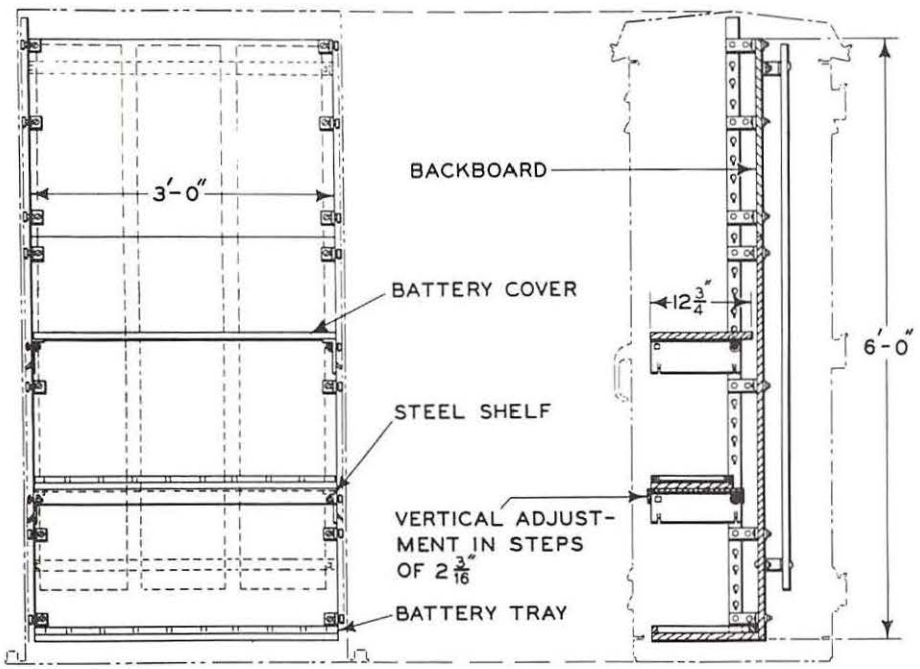


Figure 16. One steel shelf, two battery trays and one battery cover in high-single case.

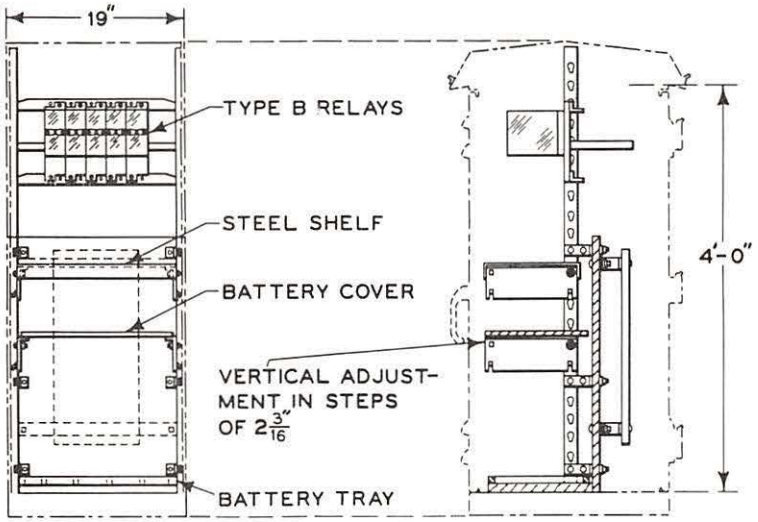


Figure 17. Five Type B, Size 1 relays, one steel shelf, one battery tray and cover in half-size case.

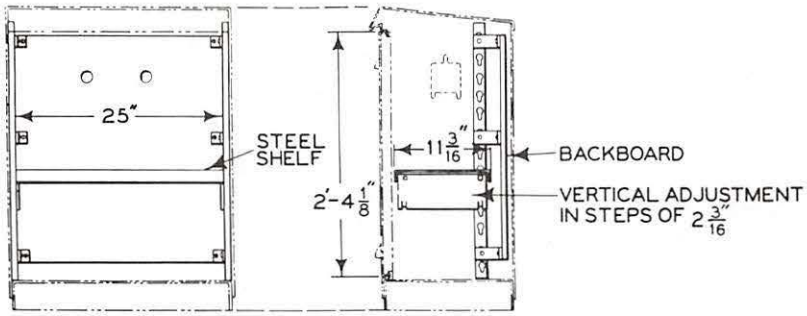


Figure 18. Steel shelf and backboard in a single-door case.

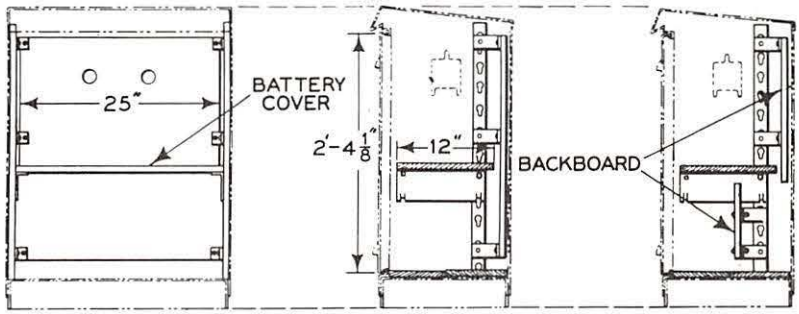


Figure 19. Cover board, floor boards, and backboards in a single-door case. Backboards are available as one-piece or as two-piece units.

ADJUSTABLE FIXTURES

Steel Shelf, Figure 20, of one width and length fits single case section. Two shelves span the width of a double case. Special shelving is used for the single-door and half-case.

Shelf Brackets of heavy gauge steel, Figure 20, are used to support the steel shelves, battery trays, and battery cover. Brackets are universal, being both left- and right-hand. The upper corner of the bracket is bolted to the keyhole channel with a carriage bolt. Bolthead slips into keyhole, slides down to lock bracket when nut is tightened. Brackets have a raised lip which wedges into the narrow portion of the first keyhole channel below the carriage bolt, holding the bracket level. Bolt, nut and washers are attached to the brackets when shipped.

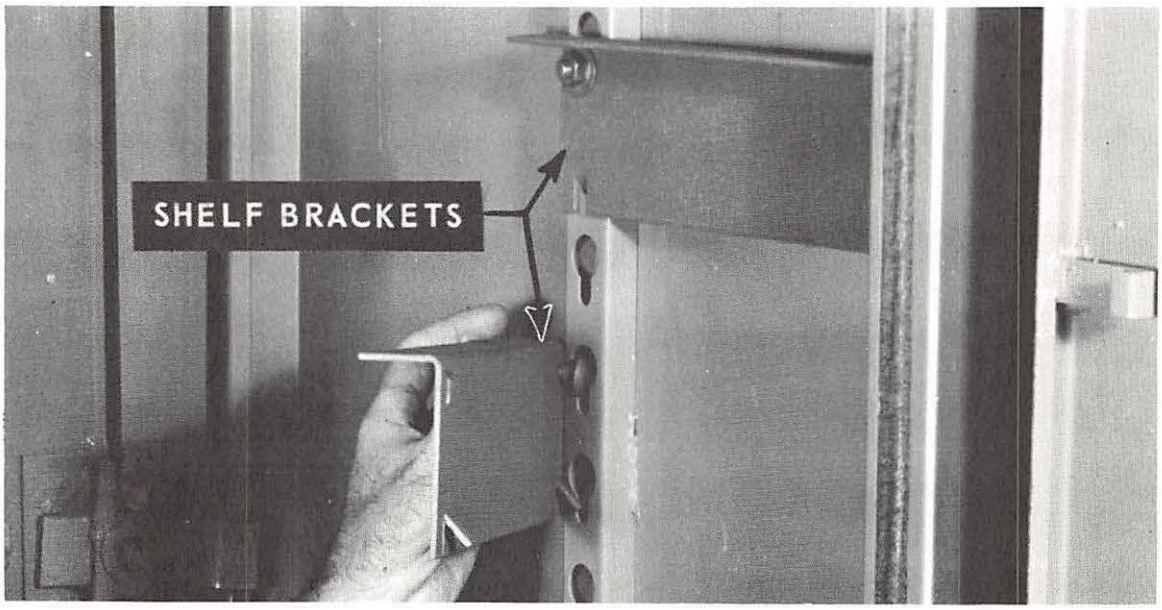


Figure 20. Shelf bracket being inserted in keyhole channel.

Cover Boards, Figure 21, are 3/4-inches thick, have acid-resistant enamel finish. The cover board is supported above the batteries by the same type shelf brackets (set furnished with each board) used for supporting the steel shelf. Cover boards are 12 3/4-inches wide by 36-inches

long for the single section; 12 3/4-inches wide by 17 inches long for the half-case; and 12-inches wide by 25-inches long for the single-door case.

Battery Trays, Figure 21, are made of wood and painted with acid-resistant enamel. Edge cleats are nailed in place and painted. Battery trays to fit single sections are furnished as follows:

12 1/2" wide by 36" long with 8 intercell cleats shipped in a bundle with nails.

19 1/2" wide by 36" long with 8 intercell cleats shipped in a bundle with nails.

9 7/8" wide by 36" long with end and side cleats only.

Battery trays to fit half size cases are furnished as follows:

12 1/2" wide by 17" long with three intercell cleats shipped in a bundle with nails.

9 7/8" wide by 17" long with end and side cleats only.

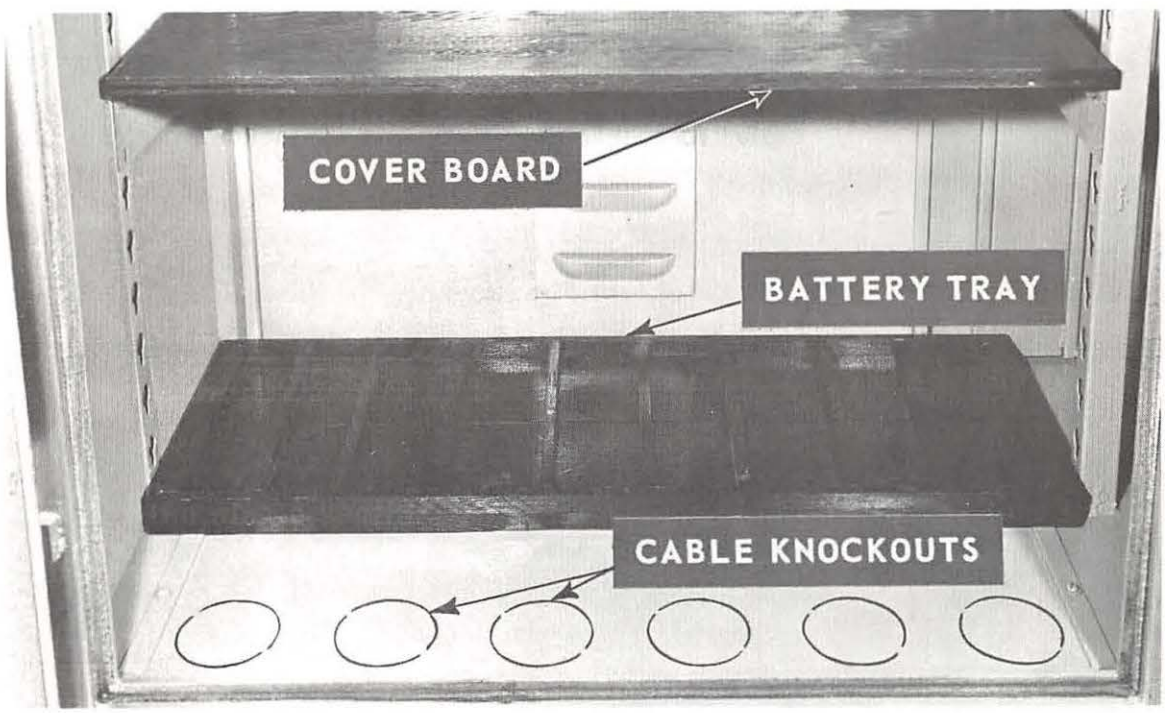


Figure 21: Single-section case showing floor plate with 3 9/16-inch diameter cable knockouts, battery tray with intercell cleats, and battery cover board. To move cable entrance knockouts toward keyhole channels, turn floor plate end for end.

GRS DEVELOPMENT SHEET

Aerial Cable Entrance Couplings, Figure 22, are available in two sizes, 2-inch by 2-inch opening or 3 1/8-inch by 3 1/4-inch opening. Eyebolt, threaded plate, screws and washers for attaching to case are shipped with each coupling.

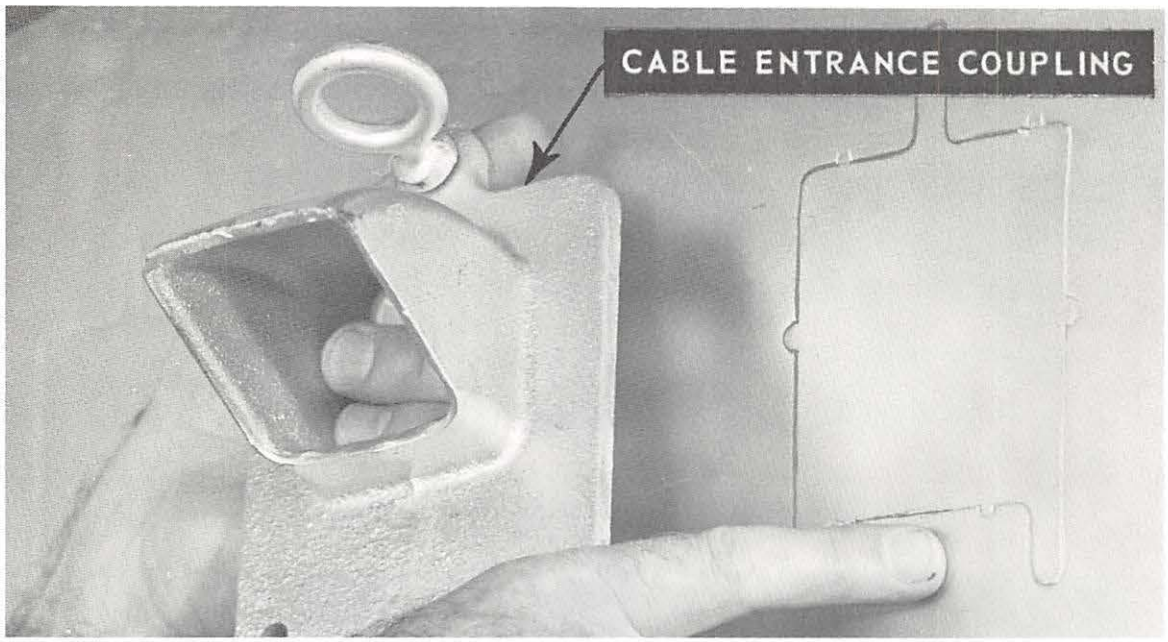


Figure 22. 2" x 2" aerial cable entrance coupling shown beside one of knockouts where it may be installed.

Ground Terminal, 5/16"-18, Figure 23, has hardened steel nut with serrated teeth which scrape the paint from the keyhole in which it is installed. It digs into the metal to ensure a good ground connection when the nut is tightened in place.

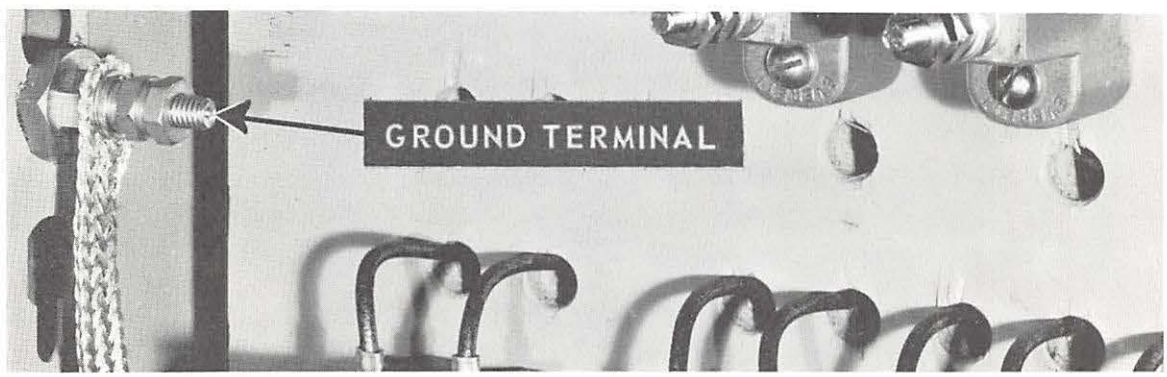


Figure 23. Ground terminal attached to keyhole channel.

Cable Support Post, Figure 24, is a heavy steel channel which bolts on the end of the case. It has a one-inch eyebolt at the top for securing messenger wire when a higher point of support is desired than that provided by the eyebolt included with each cable entrance coupling. Six keyholes in the cable support post provide for height adjustment. The post is bolted to the case through the welded keyhole channel on the inside, thus ensuring stiffness. Two sizes of posts are available, one for low cases and one for high cases.

Maintainer's Call Lamp, Figure 24, is a weatherproof, medium-screw base lamp which may be mounted on the case at any upper aerial cable entrance knockout. It fits any case shown and comes complete with all parts for mounting and with adapter for 2-pin candelabra lamp (lamp not included).

Pull Chain Light Socket (less bulb) bolts to the mounting bracket welded in top-center under the roof of all cases except single-door. Fastenings are provided.

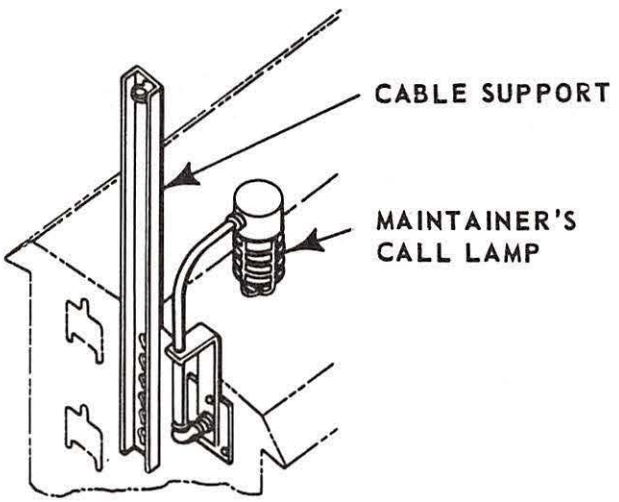
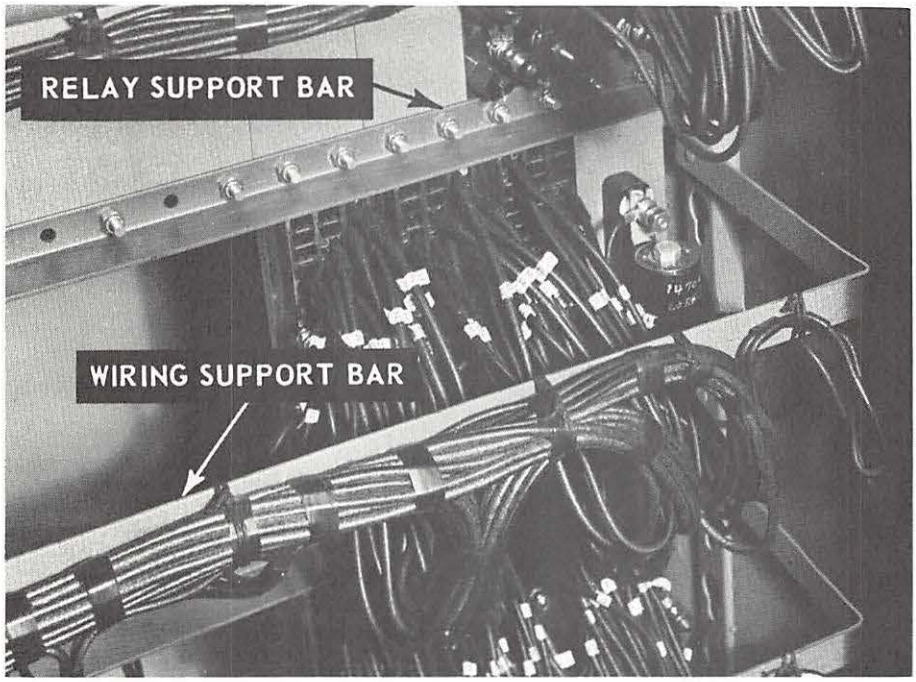


Figure 24. Cable support post and maintainer's call lamp mounted on end of case.

GRS DEVELOPMENT SHEET

Wiring Support Bar, Figure 25, is used for supporting the wire harness behind the B-relay plugboards. It fits the keyholes and spans a single section. A shorter bar is available for the half case. Wiring support bars are not needed for the single-door case.

Relay Support Bar, Figure 25, is used for supporting Type B relay plugboards. It fits the keyholes in a single section. A shorter bar is available for the half case. Relay support bars are not needed for the single-door case.



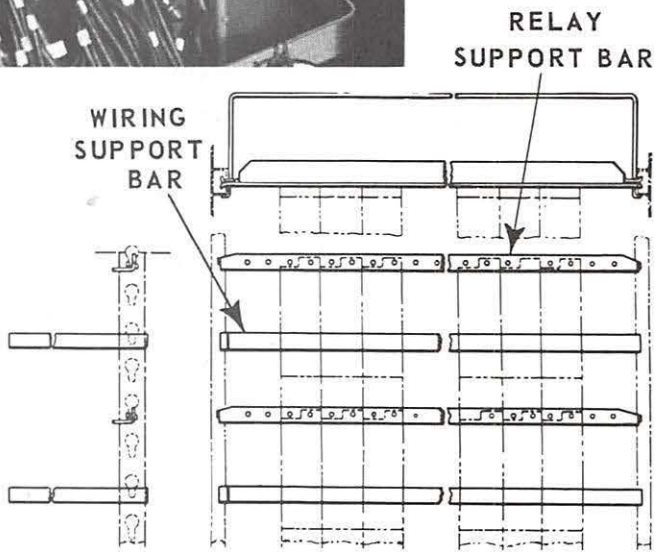
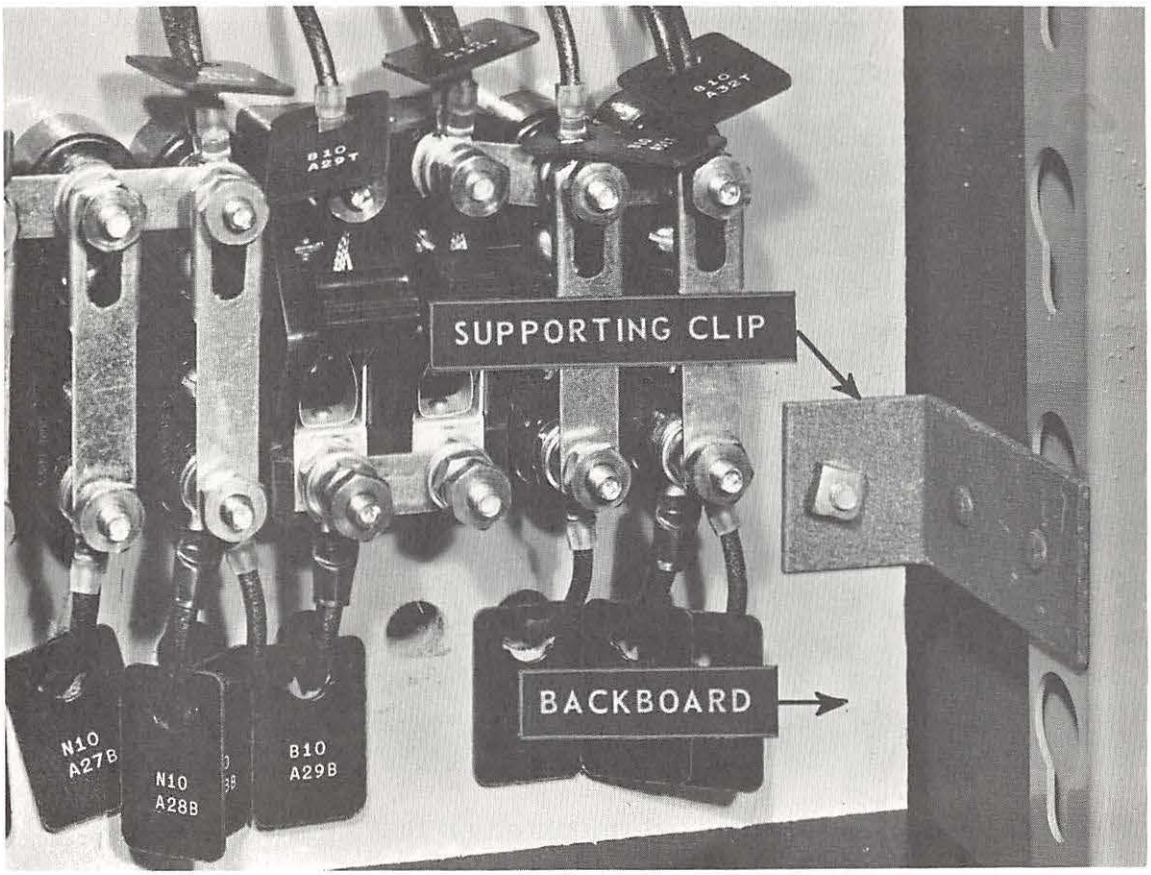


Figure 25.
Wiring support bars and relay support bars engaged in keyhole channels.

Note:
Two relay support bars and one wiring support bar are required for the first row of relays. For each additional consecutive row, one relay support bar and one wiring support bar are required.

Backboards, Figure 26, are 3/4-inch thick and are furnished complete with all mounting hardware. One-piece backboards are available for low cases and half cases, two-piece for high cases, and one- or two-piece sets are available for single-door cases.



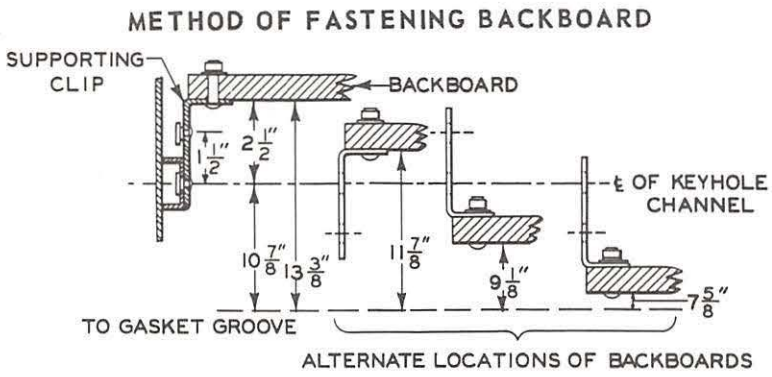


Figure 26. Adjustable backboards fasten to clips which fit keyhole slots.

Terminal Boards, Figure 27, are 3/4-inch thick and are furnished complete with all hardware for fastening them to backboards. Three-piece terminal boards are available for low cases and for high cases. A one-piece board is used in the half case. For single-door case, the bottom section of the two-piece backboard may be offset toward the front of the case and used as a terminal board, as shown in Figure 19.

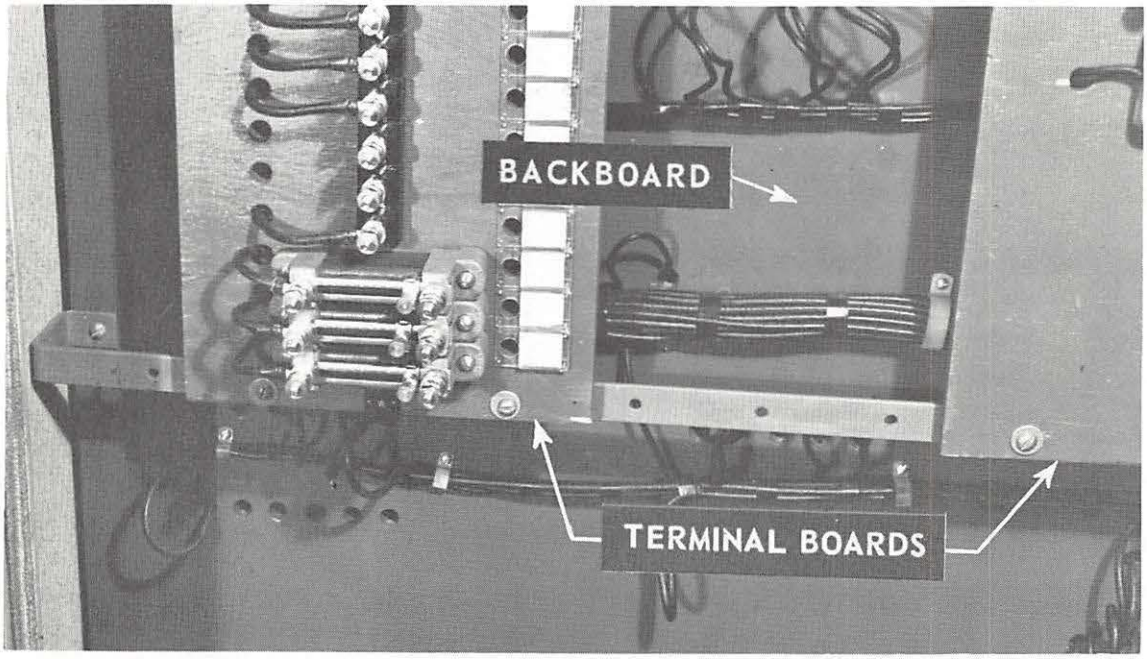


Figure 27. Terminal boards are mounted on brackets secured to backboards.

TO ORDER

See GRS Catalog Section 5 (new 8 1/2" x 11" catalog section issued April 1957) - or simply tell us what cases and fixtures you want from illustrations herein.